Claims

1. Study of the genetic region UL131-128 which determines leukotropism, monocyte tropism, endothelial cell tropism in human cytomegalovirus (HCMV) in FIX-BAC and all HCMV laboratory and wild-type strains as well as BAC-cloned HCMV strains such as (TowL-BAC, HB-5-BAC, TowS-BAC, TB40E-BAC, Phoebe-BAC, Powers-BAC, AD169-BAC) and their respective reconstituted viruses.
2. Study and synthesis of the newly identified viral transcripts running through the UL131-128 genetic region which are either spliced or unspliced, sense or anti-sense and which are encoding novel CxC, CC chemokines or other attachment, fusion and cell attraction factors.
3. Study and synthesis of the newly disclosed protein products HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 as well as other potential proteins encoded by the UL132-UL128 and UL131-128 genetic region of FIX-BAC, TowL-BAC, HB-5-BAC, TowS-BAC, TB40E-BAC, Phoebe-BAC, Powers-BAC, AD169-BAC, their respective reconstituted viruses, wild-type and laboratory strains.
4. Production of monoclonal antibodies against HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5, synthesis of chemotherapeutic agents interfering with HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 (for example small molecules, anti-sense RNA, siRNA).
5. Construction and study of cell lines which express or secrete HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5.
6. Study of tissue tropism and pathogenesis of HCMV *in vitro* and *in vivo* by constructing virus mutants which express HCK-1, HCK-2, HCK-3, HCK-4 and

HCK-5 or the newly identified transcripts (95-3, 95-8, 95-11, 128A, 128B) or other as yet unidentified transcripts of the UL132-128 or UL131-128 region.

7. Study of the transcriptional and posttranscriptional regulatory mechanisms which regulate or modify the expression of HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 or other UL132-128 or UL131-128 encoded chemokine and microfusion inducing factors regarding tissue tropism, pathogenesis of HCMV, other herpesviruses as well as DNA and RNA viruses.
8. Expression of HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 or the newly identified transcripts (95-3, 95-8, 95-11, 128A, 128B) in human or animal cells particularly immune cells in order to study or influence trafficking of such cells.
9. Use of the newly identified virus encoded chemokines HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 or the newly identified transcripts (95-3, 95-8,95-11,128A, 128B) or therapeutic agents directed against them for therapy of virus induced diseases, autoimmune disease, cancer, atherosclerosis, vasculitis, rheumatoid disease, gene therapy, vector development, vaccine development, study of trafficking and migration of leukocytes, monocytes, dendritic cells, natural killer cells, T-cells, B-cells, study of latency and reactivation of HCMV, induction or prevention of apoptosis, activation or resistance of virally infected target cells to NK cells and T cells (CTLs).
10. Study of HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 or the newly identified transcripts (95-3, 95-8, 95-11, 128A, 128B) in connection with CxC and CC chemokine receptor mediated entry of HCMV, other Herpesviruses, other DNA and RNA viruses (for example HIV) into target cells and study of cell adherence mechanisms.

11. Structural analyses of HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 and potentially other chemokine, cytokine adherence and microfusion factors encoded by the UL132-128 or UL131-128 genetic locus.

12. Study of co-infection or transfection of target cells (expressing HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5) by HCMV and other DNA and RNA viruses, especially HIV virus.

13. Study of HCK-1, HCK-2, HCK-3, HCK-4 and HCK-5 or the newly identified transcripts (95-3, 95-8, 95-11, 128A, 128B) *in vivo*, *in vitro* and in animal models in connection with the development of vascular damage, development of arteriitis, vasculitis, arteriosclerosis and stenosis of the vessel wall and mechanisms of protection against such diseases.